

# A THREE-DIMENSIONAL ISLAND PIXEL PHOTO-SENSOR

## ABSTRACT

A method and structure for a photodiode array comprising a plurality of photodiode cores, light sensing sidewalls along an exterior of the cores, logic circuitry above the cores, trenches separating the cores, and a transparent material in the trenches is disclosed. With the invention, the sidewalls are perpendicular to the surface of the photodiode that receives incident light. The light sensing sidewalls comprise a junction region that causes electron transfer when struck with light. The sidewalls comprise four vertical sidewalls around each island core. The logic circuitry blocks light from the core so light is primarily only sensed by the sidewalls.